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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/782,292	02/14/2001	Takashi Hashimoto	203251US2	8355

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EXAMINER	
EISEN, ALEXANDER	

ART UNIT	PAPER NUMBER
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Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 09/782,292	Applicant(s) HASHIMOTO ET AL.	
	Examiner Alexander Eisen	Art Unit 2674	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *22 January 2004*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-13* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☒ Claim(s) *8-11* is/are allowed.

6)☒ Claim(s) *1-7,12 and 13* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

2. **Claims 1-7** are rejected under 35 U.S.C. 103 (a) as being unpatentable over **Hashimoto et al.**, (hereinafter "Hashimoto Patent"), **US 6,456,263.**

With respect to **claim 1**, Hashimoto Patent discloses a plasma display device (100 in FIG. 4) comprising a plasma display panel (1) comprising a discharge cell C including a first electrode Y and a second electrode X; a driving unit (drive unit 80) for driving said discharge cell by giving a potential difference between said first electrode and said second electrode (see FIG. 8 where main electrodes X and Yare driven by various voltages creating potential differences shown as wall voltages Vw), wherein said driving unit comprises a pulse generating unit (A, X and Y driving units 85, 86 and 89, which output pulses to main electrodes A, X and Y respectively) capable of generating a voltage pulse, which continuously changing from a first voltage to a second voltage (see FIG. 8, wherein a pulse applied to a main electrode is continuously changing from 0V to –170V as in pulse Prx1), and said driving unit controls said pulse generating unit to start outputting said voltage, as voltage to be applied to said first electrode, and then stops the change of said voltage pulse at the point of time when said voltage

pulse reaches a third voltage (for example –120V as pulse Pry2 in FIG. 8) between said first voltage (0V) and said second voltage (-170V).

Although Hashimoto does not teach that any of the voltage levels, 120V or 170 V, are final, it would have been obvious to one of ordinary skill in the art at the time when the invention was made that ramping voltage is conventionally obtained by charging panel capacity through the switches and the final voltage is controlled by the timing of the switches or charging current, and therefore it would be obvious that both 120 v and 170 level can be achieved by the same driver using the same power supply, just having timing control of the pulses as soon as the power supply voltage is exceeding both this levels, and ultimately the power supply voltage is the real "final", i.e. the maximum, which can be achieved. The essence of claim 1 is that the maximum output voltage level of the ramp generator can be achieved by controlling the time of the ramp, which is notoriously known in the art.

As to **claim 2**, Hashimoto Patent teaches (see FIG. 1) that the third voltage (a maximum voltage Vr at what the change of the voltage pulse is stopped) is set pass the firing voltage Vf (on the side of the larger second voltage). A charge adjusting voltage is gradually increases from 0V to Vr, then at some point before reaching Vr an effective voltage of the discharge cell reaches the firing voltage Vf, and after a little delay a first discharge takes place (first little spike in FIG. 1D in series of spikes). As can be seen from FIG. 1A, the charge adjusting voltage continues to change and reaches the third voltage Vr after a time longer than a discharge delay time passes from the point of time when said voltage pulse exceeds said firing voltage Vf (the time passed after the first overshoot occurs over the Vf line in FIG. 1C, see FIGS. 1A – 1D, column 4, lines 30-67).

As to **claim 3**, the pulse form constitutes a ramp voltage as can be seen from FIGS. 1A-D and 8 (but not actually limited to that, see column 4, lines 33-36).

In regard to **claim 4**, Hashimoto Patent teaches that the driver unit is capable of generating a rectangular voltage pulse (as one applied to electrode X in FIG. 15 in the first timing line) and outputs a voltage pulse in which one of the CR voltage pulse, ramp pulse and LC resonant voltage pulse (as a ramp pulse applied to electrode Y in FIG. 15 in the second timing line) is superimposed on said rectangular pulse as a voltage applied between the first and second electrodes (as one on the third timing line in FIG. 15; see also column 15, lines 10-21).

As to **claim 5**, Hashimoto Patent further teaches that plasma display device has one field divided in a plurality of subfields (see FIGS. 6-7; column 8, lines 29-35; column 10, line 5 – column 11, line 48), each including an addressing period (TA) and sustain period (TS), set after said addressing period, and whether said discharge cell should be illuminated or not in said sustain period is determined in said addressing period, and said discharge cell is illuminated in said sustain period if it is determined in said addressing period that said discharge cell should be illuminated; and said driving unit starts and stops applying said voltage pulses in a period other than said addressing and said sustain period in at least one of said subfield in said one field (as can be seen from FIG. 7 said voltage pulse Pry2 is applied in an address preparation period TR and not in the addressing period or sustain period; the preparation period TR being a part of a subfield period Tsf).

As to **claim 6**, Hashimoto Patent teaches that using the address preparation technique wherein two voltages are employed, a charge producing voltage and a charge adjusting voltage, the desired wall charges can be produced in all cells regardless of a display history (see column

6, lines 42-48), and that regardless of whether or not the discharges will take place after application of pulses Prx1, Pry1 and Pra1 in the first part of the address preparation period TR (see FIG. 7), they will be surely generated by the application of pulses Prx2, Pry2 and Pra2 (see column 13, lines 58-67), i.e. regardless of a display history (whether or not the cell was illuminated in the preceding sustain period) the discharge will be generated in the cell.

As to **claim 7**, one can see from FIG. 7 that the third voltage Pry2 is started before the addressing period and is set to a value noticeably lower than an address voltage Py applied to said first electrode Y during the addressing period (see also FIG. 2 and column 6, lines 5-18, explaining that in order for the invention to work both pulses Vr and Vp should be of same polarity and should be set in relationship shown in FIG. 2, i.e. $Vr < Vp$, Vp being an address voltage).

3. **Claims 12-13** are rejected under 35 U.S.C. 103(a) as being anticipated by **Hashimoto et al.**, (hereinafter "Hashimoto Publication"), US Patent Application Publication **US 2002/0186186 A1** in view of Hashimoto Patent (as above applied to claim 1).

With respect to **claim 12,** Hashimoto Publication discloses a plasma display device (100 in FIG. 2) comprising a plasma display panel (1) that comprises a discharge cell C including a first electrode (main electrode Y – scan/sustain electrode) and a second electrode A (address electrode); and a driving unit (drive unit 80) for driving said discharge cell by giving a potential difference between the first electrode and the second electrode (as in waveforms in FIG. 5), wherein said driving unit generates a discharge in said discharge cell during an operation for defining whether said discharge cell is illuminated or not (during addressing period), regardless of whether said discharge cell is illuminated for display or not (see FIGS. 1A and 1B, page 1,

paragraphs [0012], [0032 – 0034], [0046]). As can be see from FIGS 1A,B and paragraph [0046] during the addressing period discharge is generated in all cells whether or not any particular cell should be illuminated for display in the following sustain period.

Hashomoto Publication does not teach that the driving unit comprising a pulse generation unit, which starts outputting voltage pulse, then stops it at the point of time when the output voltage reaches a voltage between a first voltage and a second final voltage to perform operation for defining whether the discharge cell is illuminated or not.

However, Hashimoto Publication teaches that during the defining operation ramping voltages of various final levels are applied to the electrodes ([0049] and it would have been obvious to one of ordinary skill in the art that this voltages can be controlled as taught by Hashimoto Patent (see discussion above concerning claim 1), because the pulses produced during defining period have the same functionality, i.e. to generate strong and weak discharges in all cell, whether or not the cell is to emit light in the next frame.

In regard to **claim 13**, as can be seen from FIG. 2, the plasma panel (1) has a plurality of discharge cells C and the discharge during addressing period includes a first discharge (strong discharge) and a second discharge (weaker discharge) than the first discharge, the driving unit (80) performs the operation including an operation for defining whether said discharge cell is illuminated or not (this is decided by subfield data stored in the frame memory, wherein the value of each bit of information indicates whether the discharge cell is required to be lightened or not and thus indicating whether the addressing discharge is strong or weak, see paragraph [0035]) by sequentially applying an address pulse (scanning pulse Py in FIG. 5) to said first electrode (scanning electrode Y) of each of said plurality of discharge cells (those belonging to

one line) to sequentially select said plurality of discharge cells (consecutive lines are selected by sequentially applying scanning pulses Py), and generating said first discharge (strong discharge) in a selected one of said plurality of discharge cells when a data pulse (subfield data applied to address electrodes A) is applied to said second electrode of the selected discharge cell (i.e. when the data indicates that the cell will be illuminated in this subfield); and generating the second (weak) discharge in said selected discharge cell when said data pulse is not applied (data indicates that that the cell will not be illuminated in this subfield, see paragraphs [0039] and [0046]).

Response to Arguments

4. Applicant's arguments with respect to claims 1 and 12 have been considered but they are not persuasive. Applicant argues that Hashimoto'263 does not teach or suggest a third voltage being applied to the first electrode at timing before the second final voltage to be applied to the first electrode. Applicant alleges that pulse Prx2 stops its continuous voltage change in synchronization with the timing when pulse Pry2 becomes the third voltage -120V at a much later timing after the pulse Prx1 of the second final voltage of -170V is applied in Hashimoto '263. Examiner respectfully disagrees. Applicant compares different pulses, while it is clear that pulse Pry2 becomes the third voltage of -120V before it would have reached the second final voltage of -170V, and it is stopped before reaching that final voltage. Claim 1 subject matter is about a driving unit capable of generating continuously changing voltage from first voltage to second final voltage, which can definitely generate any voltages in between. So does

Hashimoto'263, its driver is capable to generate voltage from 0 to -170V and capable to be stopped at -120V to produce the voltage Pry2. Therefore the rejection is maintained.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Alexander Eisen whose telephone number is **(703) 306-2988**. The examiner can normally be reached on M-F (8:30-4:00).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Richard A. Hjerpe can be reached on **(703) 305-4709**.

Any response to this action should be **mailed to:**

Commissioner of Patents and Trademarks

Washington, D.C. 20231

or **faxed to:**

(703) 872-9306 (for Technology Center 2600 only).

Hand-delivered responses should be **brought to:** Crystal Park Two, 2121 Crystal Drive, Arlington, Virginia, Sixth Floor Receptionist.

Any inquiry of a general nature or relating to the status of this application or proceeding should be **directed to:** Technology Center 2600 Customer Service Office, whose telephone number is **(703) 306-0377**.

Alexander Eisen
March 3, 2004